FLOW-PRO™ Vane Wheel for HP, RP & RS/RPS Mills

Improve Mill efficiency while reducing maintenance costs

Mill Efficiency - Increased performance
Up to 10% by maintaining top output w/no degradation over 2 x longer than competitor vane wheels

Output – Extended LifeCycle
Up to 6 x the lifetime over competitor vane wheels

Benefits
- Significant efficiency gain
- Attractive return on investment combined with long equipment lifetime
- Lower velocities for reduced downstream wear
- Reduced localized wear
- Increased pulverizer availability
- Reduced maintenance costs

GE has developed its patented FLOW-PRO™ Vane Wheel application for HP, RP, RPS, and RS pulverizers. It has been designed to manage the critical air and coal mixing occurring around the outer diameter of the bowl by reducing velocities and minimizing recirculation within the pulverizer body to provide increased equipment service life and improved performance. GE has combined years of coal pulverization experience with computational fluid dynamics (CFD) technology to develop this FLOW-PRO™ Vane Wheel.

The FLOW-PRO™ Vane Wheel improves upon previous GE vane wheel technology while retaining the time-proven flow patterns through the pulverizer, but does so with reduced wear and greater simplicity. Significantly reduced wear is achieved by lowering the position of the deflector liners from the zone where the coal has been entrained by the airflow to the elevation where the air meets the coal. The lower position of the deflector liners redirects the primary airflow, while it is still 'clean', and redirects it inward over the bowl rim where it entrains the coal. The coal is then rolled immediately back over the bowl rim and decelerated, allowing the large particles to drop back to the grinding zone for further pulverization.

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The remaining smaller coal particles are directed up through the separator body at a relatively low velocity, resulting in reduced wear, enhanced drying, and improved classifier efficiency.

The FLOW-PRO™ Vane Wheel incorporates a resized deflector along with high-grade liner materials for the deflector, vanes and wing tips. The CFD and the force and velocity analysis illustrate that the FLOW-PRO™ Vane Wheel provides more uniform flow velocities that results in substantially reduced localized wear.

GE can customize vane segments to suit a customer’s needs for both complete FLOW-PRO™ Vane Wheels and replacement parts for existing vane wheel assemblies.

In addition to the gains provided by air flow management, enhanced wear resistance is provided by:

- AR plate inner segment shroud
- Replacement vane liners made from Triten™ (chrome-carbide) plate
- Wear-resistant weld overlay

Features

- Deflector liners located in the clean air region for reduced wear
- 360-degree flow path for even flow distribution to the classifier
- The flow control gap (between the rotating and stationary components) are located out of the erosion zone
- Wingtips retained for efficient air velocity and spillage control
- Small size and steep angle of deflector liners virtually eliminate any coal hide out areas
- A selection of wear materials and vane wheel attachment methods are available

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